	Α	В	С	D	E	F	G	Н				
1		,	Appendix	B: Emissions Calculations								
2				Summary of Modification								
3												
4		Compa	ny Name:	MGPI of Indiana, LLC								
5			Address:	7 Ridge Avenue, Lawrenceburg, Indiana 47025								
6	Significant Source	Modifica	tion No.:	0296-35496-00005								
7	Significant Permit	Modifica	tion No.:	029-35505-00005								
8		F	Reviewer:	Kristen Willoughby								
9			Date:	12/22/2014								
10			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~									
11		,	<u>Ur</u>	ncontrolled Potential to Emit (tons/yr)				,				
12	Emission Unit	PM	PM10	PM2.5 *	SO ₂	NOx	voc	СО				
13	One (1) DDG Dryer, identifed as EU-39	418.77	418.77	418.77	18.84	27.86	418.77	464.28				
14	Wet Pad (EU-40)	-	-	-	-	-	0.89	-				
	2 Screw Conveyors, 1 Drag Conveyor, 3											
15	Product Conveyors, 1 K-Valve	2.55	1.42	0.24	-	-	-	-				
16	Total	421.32	420.19	419.01	18.84	27.86	419.66	464.28				
17	* PM2.5 listed is direct PM2.5	PM2.5 listed is direct PM2.5										

	I
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	Total HAPs
13	39.36
14	0.04
15	-
16	39.40
17	

	A	В	C	D	ΙE	TF	G	Н	
1	,			B: Emissions Calculations	<u> </u>			1	l'
2			In In a a	Summary of Emissions					
				,					
3									
4	(Compa	ny Name:	MGPI of Indiana, LLC					
5			Address:	7 Ridge Avenue, Lawrenceburg, Indiana 47025					
6	Significant Source N	// odific							
\vdash	-								
7	Significant Permit N								
8			Reviewer:	Kristen Willoughby					
9			Date:	12/22/14					
10				Emissions (ton/yr)					
12	Process/Emission Unit	PM	PM10	PM2.5	SO2	NOx	VOC	СО	GHG
13	, rossorminosion ont	. (*)	1 171 1 0		1	1			
14				PTE (New Units)					
15	DDG Dryer (EU-39)	8.38	8.38	8.38	18.84	27.86	8.38	46.43	27,473
16	Wet Pad (EU-40)	_	-	-	-	-	0.89	_	-
17	PTE	8.38	8.38	8.38	18.84	27.86	9.27	46.43	27,473
18	Λ.	stual to	Potential (I	DDG Cooler and Transport System EU-32)					,
19									
	Baseline	0.00	0.00	0.00	-	-	0.00	-	-
	PTE	7.91	5.01	2.01	_	-	9.16	-	-
22	Emissions Increase (ATPA)	7.91	5.01	2.01	-	-	9.16	-	-
23		Ad	tual to Proj	ected Actual (EU-32 Rotary Dryers)					
24	Deselles				Т	1	COE E4	T	1
		21.45 19.85	21.45	21.45	-	-	635.51	-	-
26 27	Projected Actuals Emissions Increase (ATPA)	<0	19.85 <0	19.85 <0	-	-	587.94 <0		-
28	Elilissiolis liiclease (ATFA)	<u> </u>	~0						
29				Hybrid Test					
	Total PTE New Units	8.38	8.38	8.38	18.84	27.86	9.27	46.43	27,473
	Total Emissions Increase from ATPA	7.91	5.01	2.01	- · ·		9.16	T -	
32	Hybrid Test Emissions Increase		13.38	10.39	18.84	27.86	18.42	46.43	27472.88
33	PSD Significant Threshold		15	10	40	40	40	100	75,000
34			***************************************			***************************************		***************************************	***************************************
35	PM2.5 Net Emissions (ton/yr)								
	Emissions Increase from ATPA	10.39							
37	Contemporaneous Netting								
	EU-32 Rotary Dryers - Baseline	21.45							
	EU-32 Rotary Dryers - Projected Actuals	19.85							
	Project Reductions - EU-32 Rotary Dryers	-1.61							
41	AA 029-32386-00005 (issued 12/17/12) - add 3 boiler								
	3 Boilers - Baseline 0.00								
	3 Boilers - Projected Actual	0.41							
44	Projected Increases from 3 Boilers	0.41							

	A	В	С	D	E	F	G	Н	I	
45	Renewal T029-32119-00005 (issued 06/20/14) - remov	⁄e 3								
46	3 Boilers - Baseline	0.00								
47	3 Boilers - Projected Actual	-0.41								
48	Projected Decrease from 3 Boilers	-0.41								
49	Emissions Increase	8.78								
50	PSD Significant Threshold	10								
51										
52	Note: Baseline emissions for the DDG Cooler and Transport System are assumed to be zero. The transport system has new units being added.									
53	MGPI's production is bottlenecked at the existing stills which are not being modified. Any increase in production could have been accommodated with the existing dryers.									

Cell: B37

Comment: jlacker:

you need to show the baseline to projected actuals for all (+)/(-) and document the baseline year.

KW - done

	А	В	С	D	Е	F	G	Н	l	J	K
1							Appendix B:	Emissions	Calculations		
2							1	DDG Dryer (I	EU-39)		
3											
						_					
4						Con	npany Name:	MGPI of Ind	liana, LLC		
5							Address:	7 Ridge Ave	enue, Lawrence	burg, Indi	ana 470
6					Significa	ant Source Mod	ification No.:	0296-35496	-00005		
7					Signific	ant Permit Mod	ification No.:	029-35505-0	0005		
8							Reviewer:	Kristen Will	loughby		
9							Date:	12/22/2014			
10											
				Hourly	Annual	Heat Content	Fuel Usage	1			
11		Comb	ustion Source	MMBtu/hr	MMBtu/yr	(Btu/scf)	(MMcf/yr)				
12	Direct-fire	ed Dryer Heat	t Input Capacity ^(a)	45	394,200	1,020	386.47				
13		RTO Heat	Input Capacity ^(a)	8	70,080	1,020	68.71				
14		Total He	at Input Capacity	53	464,280		455.18				
15								-			
16			ction Capacity	ton/hr	ton/yr						
17	Onorete		Dry Grain (DDG)	9.56	83,754]					
18						7					
l				Pollutant	Control						
19			<u>-</u> -	***************************************	Efficiency	4					
20	Control Eff	=	Criteria Emissions	HAPs VOC	97%	-					
22		(% Remov	'al) ^(e)	CO	98%	-					
				PM/PM ₁₀ /PM _{2.5}	98%	-					
23	**************************************	000000000000000000000000000000000000000		1 1471 14110/1 1412.5	90 70	J					
			Pollutant	NOx		Co	<u> </u>		SO ₂	T v	ос
25 26		_	Uncontrolled	0.12		2.			0.45		0.0
		ons From ing (EU-39)	Emission	Ibs/MME	Rtu	lbs/MI		lhs	/ton DDG	1	n DDG
27			Factor Units	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	
29		Uncontrolled		6.36	27.86	106.00	464.28	4.30	18.84		418.77
30		Controlled			-	10.60	46.43	-	-	1.91	8.38
31	***************************************	_ 31.00			4		ohooooooooooooooooooooooo	ndanananananananananananananananan			
						T					
	HAP Emis	sions		Acetaldel	nyde	Formalo	dehyde	<i> </i>	Acrolein	Meth	nanol
32	From DD0		Pollutant Uncontrolled	Λ P					0.01		4.4
33	(EU-39)		1	0.5 Ibs/ton D	ngs	0.3 lbs/ton		lhe	0.01 /ton DDGS		11 DDGS
35		Emission Units	lbs/hr	tpy	Ibs/hr	tpy	lbs/hr	tpy	lbs/tor	,	
ļ	Uncontrolle	ed PTF	51111.3	4.78	20.94	2.96	12.98	0.10	0.42	1.05	4.61
	Controlled			0.14	0.63	0.09	0.39	0.00	0.01	0.03	0.14
<u> </u>	Jonatoliou			V. 17	1 0.00	1 0.00	3.00	0.00	1 0.01	1 3.00	U. 17

	-		1							¥	
20	A A	B adiana IIO	С	D	E	F F	G	H	l l	J	K
38 39		ndiana, LLC	renceburg, India	no 47025		DDG Dryer (EU	-39) Continue	ea			
40	/ Kluge A	venue, Law	renceburg, mulai	11a 41 025							
41					C	ombustion HAPs	: - Organics		1		
				_	Dichlorobenze						
42				Benzene	ne	Formaldehyde	Hexane	Toluene	Total - Organics		
43	Emission I	actor in lb/N	1Mcf	2.1E-03	1.2E-03	Included	1.8E+00	3.4E-03			
44						Above					
45											
46	Potential E	Emission in to	ons/yr	4.779E-04	2.731E-04		4.097E-01	7.738E-04	4.112E-01		
47											
48 Combustion HAPs - Metals											
50				Lead	Cadmium	Chromium	Manganese	Nickel	Total - Metals		
51	Emission F	actor in lb/N	1Mcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	l otal motalo		
52											
53											
	Potential E	Emission in to	ons/yr	1.138E-04	2.503E-04	3.186E-04	8.648E-05	4.779E-04	1.247E-03		
55											
56	Notes:	Design heat	tianuta of direct fi	and dayor and of the	aal avidisaa aaavid	lad by the manuf	factures (ICM	lna \			
57				red dryer and of therm dry grain (DDG) prod					ead evetam will be a	مادينيم	nt to co
	(a)	i waxii idiii Si	non-term distiller s	dry grain (DDG) proc	addion rate taker	i nom lacility inic	mation. Cap	acity of propo	sed system will be e	quivaic	111 10 00
58	4.3										
59	(b)			Davastana	(lb/hr)	%solids	=				
60 61				Dryer feed Water / Evaporation	16	35.5% 0%					
62				DDG Production	i.	90%					
63		Annual oper	rations assume tha	at the proposed dryer			ıslv throughou	t the vear.			
64				actors and cyclone/th		F 15		-	er (ICM, Inc.). Assu	me PM	/PM ₁₀ 6
65	(c)	Dryer uncor	ntrolled emission f	actors and thermal ox	idizer control effic	ciencies provided	l by the manuf	acturer (ICM,	Inc.). Emission fact	ors for	specific
66		Methodolog	y:								
67	(d)	NOx and CO									
68				ncontrolled Emission F		1 5 15			h/ton]		
69 70		SO2:	u P I ⊑ (toti/yt) – [c	Incontrolled Emission	racioi (ib/iviivibi	.u) x Design Filli	g Rate (MIND	u/yi) / 2,000 i	טינטוון		
71			d PTE (lb/hr) = [Ur	ncontrolled Emission F	Factor (lb/ton DD	G) x Production	Rate (ton/hr)l				
72			, , .	Incontrolled Emission	Α,	,	· /-	/ 2,000 lb/ton]		
73		VOC, PM/PI			A						
74			, , -	rolled Emission Facto			N 5.5				
75				ntrolled Emission Fac			e (ton/yr) / 2,0	00 lb/ton]			
76				ncontrolled PTE (lb/hr)		- / -					
77				controlled PTE (tpy) x	(1 - Control Effici	ency)]					
78 HAPs (lb/ton emission factor): 79 Uncontrolled PTE (lb/hr) = [Uncontrolled Emission Factor (lb/ton DDG) x Production Rate (ton/hr)]											
79 80				Icontrolled Emission i Incontrolled Emission				/ 2 000 lb/top	1		
81				ontrolled Emission Ra	25.			, 2,000 ID/(OII)	1		
82			, , -	controlled Emission R	, ,	- 1					
83			Mcf emission factor		, , , , , , , , , , , , , , , , , , , ,		7.				
84				⁹ 42, Chapter 1.4, Tab	oles 1.4-1, 1.4-2,	1.4-3, SCC #1-0	2-006-02, 1-01	-006-02, 1-03	3-006-02, and 1-03-0	06-03	
85		Emission (to	ons/yr) = Through	out (MMCF/yr) x Emis	sion Factor (lb/N	IMCF)/2,000 lb/to	on				

	Α	В	С	D	E	F	G	Н	l	J	K
	1	ndiana, LLC				DDG Dryer (EU	-39) Continue	ed			
	7 Ridge A	venue, Law	renceburg, Indiar	na 47025							
88											
89	Greenhou	<u>ise Gas Calc</u>	<u>culations</u>								
90											
91	Greenhouse Gas										
92				CO2	CH4	N2O					
	Emission F	=actor in lb/M	1M cf	120,000	2.3	2.2					
94					***************************************						
95											
	Potential E	Emission in to	ons/yr	27,311	0.52	0.50					
97											
98	O				27.242						
99 100	1	Potentiai Emi	ssions in tons/yr		27,312						
101											
	CO2e Tota	al in tons/yr			27,473						
103	1	ai iii toilo, yi			27,470						
104				<u></u>							
	Methodol	ogy									
106	The N2O E	Emission Fac	tor for uncontrolled	d is 2.2. The N2O Em	ission Factor fo	or low NOx burner	is 0.64.				
107	Emission F	actors are fr	rom AP 42, Table 1	.4-2 SCC #1-02-006-0	02, 1-01-006-02	2, 1-03-006-02, an	d 1-03-006-03	3.			
108	Global Wa	rming Potent	tials (GWP) from T	able A-1 of 40 CFR Pa	art 98 Subpart .	A.					
	•			yr) x Emission Factor (•						
110	CO2e (ton	s/yr) = CO2	Potential Emission	ton/yr x CO2 GWP (1) + CH4 Potent	tial Emission ton/y	r x CH4 GWP	(25) + N2O			

	L	N	Το	Р	Q
1					
2					
3					
4					
5	25 -				
6					
7					
8					
9					
 					
10					
11					
12					
13					
14					
15 16					
17					
18					
19					
20 21					
22					
23 24					
25 26	PM 10.0	PN		PI	/l _{2.5}
26		10		1	0.0
27 28	lbs/ton DDG	lbs/tor	DDG	1	n DDG
28	lbs/hr tpy	lbs/hr	tpy	lbs/hr	
29 30	95.61 418.77	95.61		95.61	
31	1.91 8.38	1.91	8.38	1.91	8.38
٣					
		Total	НАР		
32	Total HAP (from Natural Gas Combustion)	Emissi	ions ^(e)		
32 33 34 35 36 37	See Below				
35	lbs/hr tpy	lbs/hr	tpy	1	
36	0.09 0.41	8.99	39.36]	
37	2.82E-03 0.01	0.27	1.18		

	L	M	N O	Р	Q
38		Significant Source Modificaiton	No.: 0296-35276-0000	5	
38 39		Significant Permit Modification			
40					
41					
42					
43					
44					
43 44 45					
46					
47					
46 47 48 49					
49					
50					
50 51					
52					
53					
54					
55					
52 53 54 55 56 57					
57					
	nbined capacity of the existing steam-tube dryers (portion of existing EU-32). Material balance is as follows:				
58					
59 60 61 62 63					
60					
61					
62					
	wissians are so it plant. Haday the Dart 70 Denote Description late weather with an according only dispersion less than a consul	to a magninal 40 missagement of (DMA)			
65	nissions are equivalent. Under the Part 70 Permit Program particulate matter with an aerodynamic diameter less than or equal	to a nominal 10 micrometers (PM ₁₀),	is considered a regulati es includo omissions	eu	
66	HAPs include both process emissions from the DDG drying operations and natural gas combustion emissions occurring within	the direct-lifed dryer. Emission facto	is include emissions		
66 67					
60					
70					
71					
72					
73					
74					
68 69 70 71 72 73 74 75					
	Highlighted equations are not correct. Suggest replacing VOC, PM equations with the equations used for HAP.				
77	momonitude of authors are not contest. Cuspost replacing 100) i in equations with the equations asea for high i				
78					
79					
80					
81					
82					
83					
77 78 79 80 81 82 83 84 85					
85					

	L	M	N	0	Р	Q
86 87	Significant Source Modificaiton No.: 029					
87	Significant Permit Modification No.: T0	029-32119-00005				
88						
89						
90						
91						
92						
92 93 94						
94						
95 96 97						
96						
97						
98						
99						
100						
101						
102						
103						
104						
105						
106						
99 100 101 102 103 104 105 106 107 108 109 110						
108						
109						
110						ļ

	A B	C D	E	F	G	Н	I	J	K	L	М	N	0	Р	Q								
1					Appendix	B: Emissions Calculations																	
2						Wet Pad (EU-40)																	
3																							
4				Compa	ıny Name:	MGPI of Indiana, LLC																	
5					Address:	7 Ridge Avenue, Lawrenceburg, Indiana 47025																	
6	Significant Source Modification No.: 0296-35496-00005																						
7																							
8					Reviewer:	Kristen Willoughby																	
9					Date	: 12/22/2014																	
10																							
· •														Uncontrolled									
						0.0083	0.0	001	0.0	0002	0.0	0002	0.0	0004	Tata								
11 12	Fmission Unit	Emission Point ^(a)]	Emission		0.0083 lb/ton wet cake	ID/ LU	II WEL		0002 wet cake	ID/ CO	II WEL		0004	Tota Emis								
11	Emission Unit	Emission Point ^(a)						II WEL	lb/ton		ID/ CO		ID/ LC		Tota Emis								
11	Emission Unit		Dryer	Emission Factors ^(b)	(lb/hr)	lb/ton wet cake	ACETAÎ	n wei lenyue)	lb/ton '	wet cake	ID/TO	n wei denyae _{d)}	Meth	anol ^(d)	Emis								
11 12 13		Wet Cake	Dryer (ton/hr)	Emission Factors ^(b) Feed ^(c) (ton/yr)		Ib/ton wet cake VOC ^(d) (ton/yr)	Acetait	ii wet lenyue) (ton/yr)	lb/ton h Acro	wet cake plein ^(d) (ton/yr)	(lb/hr)	denyue denyue d) (ton/yr)	Meth	anol ^(d) (ton/yr)	Emis (lb/hr)								
11 12 13 14	Emission Unit	Wet Cake Production, Storage,	Dryer (ton/hr)	Emission Factors ^(b) Feed ^(c)		Ib/ton wet cake VOC ^(d)	Acetait	ii wet lenyue) (ton/yr)	lb/ton h Acro	wet cake plein ^(d)	(lb/hr)	denyue denyue d) (ton/yr)	Meth	anol ^(d)	Emis (lb/hr)								
11 12 13 14		Wet Cake	Dryer (ton/hr)	Emission Factors ^(b) Feed ^(c) (ton/yr)		Ib/ton wet cake VOC ^(d) (ton/yr)	Acetait	ii wet lenyue) (ton/yr)	lb/ton h Acro	wet cake plein ^(d) (ton/yr)	(lb/hr)	denyue denyue d) (ton/yr)	Meth	anol ^(d) (ton/yr)	Emis (lb/hr)								
11 12 13 14 15	EU-40	Wet Cake Production, Storage,	Dryer (ton/hr)	Emission Factors ^(b) Feed ^(c) (ton/yr)		Ib/ton wet cake VOC ^(d) (ton/yr)	Acetait	ii wet lenyue) (ton/yr)	lb/ton h Acro	wet cake plein ^(d) (ton/yr)	(lb/hr)	denyue denyue d) (ton/yr)	Meth	anol ^(d) (ton/yr)	Emis (lb/hr)								
11 12 13 14 15 16 17 18	EU-40 Notes:	Wet Cake Production, Storage, and Loadout	Dryer (ton/hr) 24.56	Emission Factors ^(b) Feed ^(c) (ton/yr) 215,154	0.20	Ib/ton wet cake VOC ^(d) (ton/yr)	(lb/hr)	ton/yr)	Acro (lb/hr) 0.0005	wet cake blein ^(d) (ton/yr) 0.0022	(lb/hr)	di wet denyue d) (ton/yr) 0.022	Meth (lb/hr)	anol ^(d) (ton/yr) 0.0043	Emis (lb/hr)								
11 12 13 14 15 16 17 18	EU-40 Notes: (a) VOC and I (b) Emission f	Wet Cake Production, Storage, and Loadout HAP emissions can restactor for wet cake	Dryer (ton/hr) 24.56 ult during from a s	Emission Factors ^(b) Feed ^(c) (ton/yr) 215,154 periods o imilar ope	0.20 f dryer stareration perm	Ib/ton wet cake VOC ^(d) (ton/yr) 0.89 t-up and shutdown, when the dryer throughput may be contited in Indiana under Permit #T095-30443-00127 (POI	(lb/hr) 0.002	(ton/yr)	Acro (lb/hr) 0.0005	wet cake blein ^(d) (ton/yr) 0.0022	(lb/hr)	di wet denyue d) (ton/yr) 0.022	Meth (lb/hr)	anol ^(d) (ton/yr) 0.0043	Emis (lb/hr)								
11 12 13 14 15 16 17 18	EU-40 Notes: (a) VOC and I (b) Emission f (c) Hourly dry	Wet Cake Production, Storage, and Loadout HAP emissions can res factor for wet cake takener feed is maximum as	Dryer (ton/hr) 24.56 ult during n from a s taken fror	Emission Factors ^(b) Feed ^(c) (ton/yr) 215,154 periods o imilar ope	0.20 f dryer stareration perm	Ib/ton wet cake VOC ^(d) (ton/yr) 0.89 t-up and shutdown, when the dryer throughput may be of	(lb/hr) 0.002	(ton/yr)	Acro (lb/hr) 0.0005	wet cake blein ^(d) (ton/yr) 0.0022	(lb/hr)	di wet denyue d) (ton/yr) 0.022	Meth (lb/hr)	anol ^(d) (ton/yr) 0.0043	Emis (lb/hr)								
11 12 13 14 15 16 17 18	EU-40 Notes: (a) VOC and I (b) Emission f (c) Hourly dry (d) Methodolog	Wet Cake Production, Storage, and Loadout HAP emissions can restactor for wet cake taken er feed is maximum as gy and Sample Calcula	Dryer (ton/hr) 24.56 ult during from a staken frortions:	Emission Factors ^(b) Feed ^(c) (ton/yr) 215,154 periods of similar open the mat	0.20 f dryer stareration permerial balance	Ib/ton wet cake VOC ^(d) (ton/yr) 0.89 t-up and shutdown, when the dryer throughput may be on itted in Indiana under Permit #T095-30443-00127 (POI per provided by ICM dated 1/30/2015.	(lb/hr) 0.002	(ton/yr)	Acro (lb/hr) 0.0005	wet cake blein ^(d) (ton/yr) 0.0022	(lb/hr)	di wet denyue d) (ton/yr) 0.022	Meth (lb/hr)	anol ^(d) (ton/yr) 0.0043	Emis (lb/hr)								
11 12 13 14 15 16 17	EU-40 Notes: (a) VOC and I (b) Emission f (c) Hourly dry (d) Methodologenission r	Wet Cake Production, Storage, and Loadout HAP emissions can restactor for wet cake taketer feed is maximum as gy and Sample Calculate (lb/hr) = Dryer Feed	Dryer (ton/hr) 24.56 ult during a staken from a staken from it ions:	Emission Factors ^(b) Feed ^(c) (ton/yr) 215,154 periods o dimilar open the mat	0.20 f dryer stareration pernerial balance	Ib/ton wet cake VOC ^(d) (ton/yr) 0.89 t-up and shutdown, when the dryer throughput may be on itted in Indiana under Permit #T095-30443-00127 (POI per provided by ICM dated 1/30/2015.	(lb/hr) 0.002	(ton/yr)	Acro (lb/hr) 0.0005	wet cake blein ^(d) (ton/yr) 0.0022	(lb/hr)	di wet denyue d) (ton/yr) 0.022	Meth (lb/hr)	anol ^(d) (ton/yr) 0.0043	Emis (lb/hr)								

	R	S	Т
1			
2			
3			
4			
5			
6			
7			
8			
9			
10		•	
11	I HAP		
12	sions		
13			
14	(ton/yr)		
	0.0387		
15	9500009666 1000 9500 100		Corrected link for Methanol lb/hr emissions
16			
17			
18			
19			
20			
21 22			
22			
73			

	Α	В	С	D	Е	F		
1					Appendix B:	: Emissions Calculations		
DDG Cooler and Transport System Projected Emission Estimates (EU-32) Company Name: MGPI of Indiana, LLC Address: 7 Ridge Avenue, Lawrenceburg, Significant Source Modification No.: 0296-35496-00005 Significant Permit Modification No.: 029-35505-00005 Reviewer: Kristen Willoughby Date: 12/22/2014								
11 12	Emission Unit	Emission	n Point	Description	Stack ID	Uncontrolled PM Emission Factor (lb/ton)		
12						(ID/LOTI)		
13	EU-32	4 Screw Conve Conveyors, Conveyors,	3 Product	Grain Conveying	S-310	0.061		
14		Drum C	cooler	Grain Conveying	NA	0.061		
15								
16								
17	Emission Unit	Emission	n Point	Description	Stack ID	Controlled PM Emission Factor		
18						(lb/ton)		
19	EU-32	Hamme	er Mill	Hammer Milling ^(b)	S-310	0.067		
20								
23	(b)	Factors taken from As recommended	I by AP-42 App Uncontrolled	Edition, Volume 1, Section 9.9.1 (Grain Elevators and Processes). endix B.2, Table B.2.2 for Category 7 - "Grain Processing" on Page 17, the particle siz	Controlled	Controlled		
25 26		PM Size Range	wt%	Collection Efficiency	Wt	wt%		
27		PM _{2.5}	23%	80%	0.046	54%		
		PM _{2.5} to PM ₁₀	38%	95%	0.019	22%		
28 29		PM ₁₀ and higher	39%	95%	0.0195	23%		
29			1		0.0845			
30 31 32 33 34 35 36 37	,,	Uncontrolled PTE Controlled PTE H Controlled PTE H Uncontrolled PTE	(ton/yr) = [Unc ammermill (lb/l ammermill (ton Hammermill (l	Overall control: ntrolled Emission Factor (lb/ton DDG) x Production Rate (ton/hr)] ontrolled Emission Factor (lb/ton DDG) x Production Rate (ton/yr) / 2,000 lb/ton] nr) = [Controlled Emission Factor (lb/ton DDG) x Production Rate (ton/hr)] /yr) = [Controlled Emission Factor (lb/ton DDG) x Production Rate (ton/yr) / 2,000 lb/to b/hr) = Controlled PTE Hammermill (lb/hr) / (1 - 85%) on/yr) = Controlled PTE Hammermill (ton/yr) / (1 - 85%)	91.6% n]			

	Α	В	С	D	Е	F
38	MGPI of India	ına, LLC				
	7 Ridge Aven	ue, Lawrencebu	rg, Indiana 4702	25		
40						
41						
42						Uncontrolled Emission
43	Emission	Emissio	n Point	Description		Factors ^(a)
44	Unit	Lillissio	ii i oiiit	Description		DDG throughput
45					(ton/hr)	(ton/yr)
46		Drum C	Cooler	Cooling Drum Apparatus		
47		Existing Scre	-	Grain Conveying		
	EU-32	New 3 Screw Co			9.56	83,754
		Conveyors,		Grain Conveying		
48		Conveyors,				
40		Existing Hami		Hammer Milling		
49 50		Cycle	one	•		
	Methodology					
52			ctor for DDG cod	oling taken from a similar operation permitted in Indiana under Permit #T169-31191-0	0068 (POFT	Riorefining - North Manchester) HAP emission factors
53		Methodology:	ctor for BBC cot		0000 (1 021	biolemning - North Manonestery. The emission lactors
54			/hr) = DDG Thro	ughput (ton/hr) X DDG Cooling Emission factor (lb/ton)		
55				oughput (ton/yr) X DDG Cooling Emission factor (lb/ton) x ton/2,000 lb		
56		,	• /			
57	ı	Dryer emissions				
58				tpy from Drying	% of VOC	
59			VOC	8.38		
60			Acetaldehyde	0.63	7.50%	
61			Acrolein		0.15%	
62 63			Formaldehyde		4.65%	
63			Methanol	0.14	1.65%	
64		Other DDO Octob	w Eminoles Est			
65 66		Other DDG Coole POET Biorefining				
67		FOET Blorellilling		lb VOC/hr	From June 2	2004 testing at POET-Biorefining Jewell (IA)
68				ton DDG/hr	i ioiii Juile 2	.004 testing at FOL 1-Diotellining Jewell (IA)
69				Ib VOC / ton DDG		
00			0.210000040	10 4007 (011 000		

	^	ш		1 1	V	ì	N/I	NI	0
1	G	Н	ı	J	K	L	M	N	0
2									
3									
4									
5									
6									
7									
8									
9									
10		Uncontrolled			I				
					Uncor	trolled	Unco	ntrolled	
	Uncontrolled PM ₁₀ Emission Factor	PM _{2.5}	DDG thro	ughput	PM En	nission	PM ₁₀ E	mission	
144		Emission			Ra	ate	R	ate	
11	(lb/ton)	Factor (lb/ton)	(ton/hr)	(top/yr)	(lh/hr)	/ton/wr\	(lb/br)	(ton/yr)	/lb/br\
12	(ib/conj	(15/(011)	(ton/fir)	(ton/yr)	(ID/III)	(toll/yr)	(ID/III)	(ton/yr)	(ID/III)
								g g 200	
	0.034	0.0058			0.58	2.55	0.33	1.42	0.06
13			9.56	83,754					
. (3)	0.004	0.0050			0.50	0.55	2.00	4.40	0.00
14	0.034	0.0058			0.58	2.55	0.33	1.42	0.06
15				Totals	1.17	5.11	0.65	2.85	0.11
16									
		Controlled					Con	trolled	
	Controlled DM Francisco Factor	PM _{2.5}	DDG thro	uahput		lled PM			
	Controlled Pivila Emission Factor		DDC till c	ugnput	Emission Rate		PM ₁₀ Emission		
	Controlled PM ₁₀ Emission Factor	Emission			EIIIISSI	on nate		ate	
17		Factor						ate	
17 18	(lb/ton)		(ton/hr)	(ton/yr)				(ton/yr)	(lb/hr)
18	(lb/ton)	Factor (lb/ton)	(ton/hr)		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
18		Factor		83,754	(lb/hr) 0.64	(ton/yr) 2.81	(lb/hr) 0.49	(ton/yr) 2.16	0.35
18 19 20	(lb/ton)	Factor (lb/ton)	(ton/hr)		(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
18 19 20	(lb/ton)	Factor (lb/ton)	(ton/hr)	83,754	(lb/hr) 0.64	(ton/yr) 2.81	(lb/hr) 0.49	(ton/yr) 2.16	0.35
18 19 20 21 22	(lb/ton)	Factor (lb/ton)	(ton/hr)	83,754	(lb/hr) 0.64	(ton/yr) 2.81	(lb/hr) 0.49	(ton/yr) 2.16	0.35
18 19 20 21 22 23	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23	(lb/ton)	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 a 25	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 a 25 26 27	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 a 25 26 27	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29	(lb/ton) 0.052 al PM for uncontrolled emissions. Additionally, AP-42 Appendix B.2, Table B.2.3 "Typical Col	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29	(lb/ton) 0.052	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29	(lb/ton) 0.052 al PM for uncontrolled emissions. Additionally, AP-42 Appendix B.2, Table B.2.3 "Typical Col	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29	(lb/ton) 0.052 al PM for uncontrolled emissions. Additionally, AP-42 Appendix B.2, Table B.2.3 "Typical Col	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	(lb/ton) 0.052 al PM for uncontrolled emissions. Additionally, AP-42 Appendix B.2, Table B.2.3 "Typical Col	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	(lb/ton) 0.052 al PM for uncontrolled emissions. Additionally, AP-42 Appendix B.2, Table B.2.3 "Typical Col	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35
18 19 20 21 22 23 24 25 26 27 28 29	(lb/ton) 0.052 al PM for uncontrolled emissions. Additionally, AP-42 Appendix B.2, Table B.2.3 "Typical Col	Factor (lb/ton) 0.036	(ton/hr) 9.56	83,754 Totals	(lb/hr) 0.64 0.64	2.81 2.81	0.49 0.49	2.16 2.16	0.35

	G	Н		J	K	L	М	N	0
38	Cooler Emissions (Continued)								
39									
40									
41									
42	0.219		0.0		•	0033	4	010	
43	lb/ton DDG		lbs/ton	DDG		n DDG	lbs/to	n DDG	
44	VOC	·	Acetald			olein	Forma	ldehyde	
45	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)
46									
47									
	2.09	9.16	0.16	0.69	0.0031	0.014	0.10	0.43	0.034
48									
40									
49								nannannannannannannannannan	
50 51									
	are derived as a percentage of the VOC emission factor presented, assuming that individual h	JAPs are emitte	d in the car	na nranai	tion fron	o cooling	ac from	the drain	a emice
	are derived as a percentage of the VOC emission factor presented, assuming that individual r	TAFS are ennite	u III liie Sai	ne propor	tion non	Cooling	as IIUIII	ine dryin	y emiss
54									
55									
56									
53 54 55 56 57									
58									
59									
60									
61									
62									
63									
64									
65									
58 59 60 61 62 63 64 65 66 67 68									
68									
60									
09									

	P	Q	R	S	T	U	V	W
2								
3								
4 5 6 7								
6								
7								
8 9 10								
10		1		•				
11	Uncontrolled PM _{2.5} Emission Rate		Controlled PM Emission Rate	Controlled PM ₁₀ Rate	Emission	PM _{2.5} E	rolled mission ate	
12	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
	0.24	0.09	0.38	0.05	0.21	0.01	0.04	
13								
14	0.24	0.58	2.55	0.33	1.42	0.06	0.24	
15 16	0.49	0.67	2.94	0.37	1.64	0.06	0.28	
17	Controlled PM _{2.5} Emission Rate		Uncontrolled PM Emission Rate	Uncontrolled Emission F		PM _{2.5} E	ntrolled mission ate	
18	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)	
19	1.53	12.81	56.12	9.86	43.17	1.74	7.64	
20	1.53	12.81	56.12	9.86	43.17	1.74	7.64	
21		7.58	33.20	4.62	20.25	1.74	7.64	Revisions needed?
23 F	1.53 Revision to note needed since controlled conveying emissions differ from uncontrolled emissions							
24								
25								
26								
27								
28 29								
31								
30 31 32 33 34 35 36 37								
33								
35								
36								
3/								

	P	Q	R	s	Т	U	V	W
38	·		Significant Source Modification No.:		•	-	- 1	
38 39 40 41			Significant Permit Modification No.:	T029-32119-00005				
40			-					
41								
42	0.0036							
43	Ibs/ton DDG		Total HAP Emissions					
44	Methanol			4				
45	(ton/yr)	(lb/hr)	(ton/yr)					
46								
47	0.45		4.00					
	0.15	0.292	1.28					
40								
48								
49								
50				_				
51								
52 10	ons provided in PTE calculations for DDG Dryer EU-39.							
53	,							
54								
55								
53 54 55 56 57								
57								
58								
59								
61								
62								
63								
64								
65								
66								
67								
58 59 60 61 62 63 64 65 66 67 68								
69								

	X
1	
2	
4	
5	
2 3 4 5 6 7	
7	
8 9 10	
10	
11 12	
12	
13	
14	
14	
15 16	
,_	
17	EFs: Replaced hard-entered values with calculations
10	El 3. Replaced hard-entered values with calculations
19	Uncontrolled emission rates are calculated from controlled rates assuming 95% control. This control % contradicts Note (b) below.
20	· · · · · · · · · · · · · · · · · · ·
21	
20 21 22 23	
24	
25 26	
27	
28	
29	
30	
30 31	
32	
33	
34	
32 33 34 35 36 37	
37	

	X
38 39 40 41	
39	
40	
41	
42	
43	
42 43 44 45	
45	
46	
47	
48	
40	
49	
50	
50 51 52 53 54 55 56 57	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
58 59 60 61 62 63 64 65 66 67 68	
66	
67	
68	
60	
Oa	

Cell: G10

Comment: jlacker:

to help clarify - add the stack the emissions vent to

KW - done

Cell: Q14

Comment: jlacker:

permit states emissions from the drum cooler are uncontrolled?

KW - Fixed

	D	E	F
1		Appendix B: Emissions Calculations	
2		EU-32 Rotary Dryer Baseline Emissions	
3			
4	Company Name:	MGPI of Indiana, LLC	
5	Address:	7 Ridge Avenue, Lawrenceburg, Indiana 47025	
6	nt Source Modification No.:	0296-35496-00005	
7	nt Permit Modification No.:	029-35505-00005	
8	Reviewer:	Kristen Willoughby	
9	Date:	12/22/2014	

	4					
	Α	В	С	D	Е	F
	EU-32 Rotary Dryers					
12						
13	PM, PM ₁₀ , PM _{2.5} Emissions					
			Dryer Feed	Controlled Emission	(a)	
	Constituent		Rate ^(a)	Factor ^(b)	Controlled Emissions ^(c)	
14			(ton/yr)	(lb/ton)	(ton/yr)	
-	DM		(1011/ 91/	* *	24.45	
15	PM		150 001	0.27	21.45	
16 17	PM10		158,894	0.27	21.45	
	PM2.5			0.27	21.45	
18	Nietee					
19	Notes:	Casal 6			f f	mania di Grana I ancoma
	(a)	2013 - Decer		steam tube dryer system is take	n from facility records as the average over the 24-month	period from January
20		2013 - Decei	11Del 2014.			
21	(b)	Controlled er	mission Factor fro	m AP-42, Table 9.9.7-1. The e	emission estimation methodology used matches that prov	ided in the IDEM
22	(c)	Methodology	r:			
23		Controlled En	missions (ton/yr) :	= Usage (ton/yr) x EF (lb/ton) /	2,000 lb/ton	
24 25		PM2.5 emiss	ions conservative	ely assumed to be equal to PM1	10 emissions.	
26	VOC Emissions					
			Water	VOC Content of Water ^(b)	VOC from Dryers	
	Dryer Feed Rate (ton/	/yr)	Content ^(b)			
27			(% by wt)	(lb VOC/lb water)	(ton/yr)	
28	158,894		66.66%	0.006	635.51]
29						•
30	Notes:					
31	(a)	Feed (wet ca	ike) into existing s	steam tube dryer system is take	n from facility records as the average over the the 24-mo	nth period from
32	(b)	Water conter	nt (% wt) and VO	C content of water (lb VOC/lb v	vater) taken from May 22, 2014 ATSD, Appendix A, Page	e 8 of 23, for permit
33	(c)	Methodology	and Sample Cal	culations:		
34		VOC (ton/yr)	= Dryer Feed Ra	ite (ton/yr) x Water Content of F	Feed (% by wt) x (lb VOC/lb water)	

	G	Н	I	J
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				Resized row to fit text
22				
23				
24				
25 26				
20				
27				
28				
29				
30				
31				
32				
33				
34				

	D	E	F					
1		Appendix B: Emissions Calculations						
2	EU-32 Rotary Dryer	U-32 Rotary Dryer Projected Actual Emissions						
3								
4	Company Name:	MGPI of Indiana, LLC						
5	Address:	7 Ridge Avenue, Lawrenceburg, Indiana 47025						
6	ce Modification No.:	0296-35496-00005						
7	nit Modification No.:	029-35505-00005						
8	Reviewer:	Kristen Willoughby						
9	Date:	12/22/2014						

	A B	C	D	E	F	G	
	EU-32 Steam Tube Rotary Dryers						
12							
13	PM, PM ₁₀ , PM _{2.5} Emissions						
		Dryer Feed Rate ^(a)	Controlled Emission	Controlled Emissions ^(c)		Uncon	
	Constituent		Factor ^(b)	(ton/yr)		Emiss	
14		(ton/yr)	(lb/ton)			(tor	
15	PM		0.27	19.8		13	
16	PM10	147,000	0.27	19.8		13	
17	PM2.5	***************************************	0.27	19.8	100000000000000000000000000000000000000	13	
18							
19	Notes:				c , ,		
	(a) Feed (we	t cake) into existing stea	am tube dryer system is	based on operation as back-up to the proposed direct-	fired dryer.		
20	4)		AD 40 T II 00 T 4 T				
21	, ,		AP-42, Table 9.9.7-1. TI	he emission estimation methodology used matches tha	it provided	in the IDEM q	
22 23	(c) Methodol		anne (tankır) v FF (lla/tar	-> / 2 000 lb/ton			
24			sage (ton/yr) x EF (lb/tor				
25			assumed to be equal to I				
	` '			rol efficiency for controlled emissions.			
26	PM _{2.5} em	ssions conservatively a	ssumed to be equal to P	M ₁₀ emissions.			
27							
28	V00 F : :						
29	VOC Emissions		VOC Content of		٦		
	Dryer Feed Rate (ton/hr)	Water Content ^(b) (%	1	VOC from Dryers (ton/yr)			
30	Dryer reed Rate (toll/lil)	by wt)	vater (ib voc/ib	voc from bryers (tomyr)			
31	147,000	66.66%	water) 0.006	587.9	=		
32	147,000	1 00.0076	0.000	307.9	J		
	Notes:						
34		t cake) into existing stea	am tube dryer system is	based on operation as back-up to the proposed direct-	fired dryer.		
35				lb water) taken from May 22, 2014 ATSD, Appendix A,			
36	(c) Methodol			······································			
37	VOC (ton/yr) = Dryer Feed Rate (ton/yr) x Water Content of Feed (% by wt) x (lb VOC/lb water)						
38	•	.,	` •	, , , , , , , , , , , , , , , , , , , ,			
39	HAP Emissions						
		HAP% ^(a)	HAP from Dryers				
40	HAP	(by wt of VOC)	(ton/yr)				
41	Acetaldehyde	6.18%	36.3				
42	Acrolein	0.37%	2.2				
43	Methanol	1.24%	7.3				
44	Formaldehyde	0.04%	0.2				
45	Total		46.0				
46							
47	Notes:						

	А	В	С	D	E	F	G
48	(a) HAP composition taken from May 22, 2014 ATSD, Appendix A, Page 8 of 23, for permit T029-32119-00005.						

	ш
44	Н
11	-
12	-
13	
	trolled
	ions ^(d)
14	/yr)
15	2.3
16	2.3
17	2.3
18	
19	
20	
21	ocument
22	
23	
24	
25	
26	
27	
28	
29	
00	
30	
31	
32	
33	
34	
35 36	
37	
37 38	
39	
33	
40	
41	
42	
43	
44	
45	
46	
47	

	Н
48	